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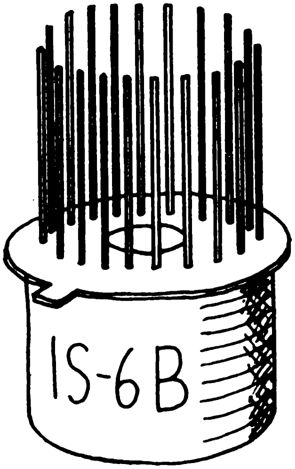

INTERPLATED SNICKETT 6 BAND RECEIVER MODULE WITH FULL LATTICE FILTER, AUTOMATIC TEMPERATURE CONTROL, AND INTEGRAL LOUDSPEAKER (NOT IN VIEW) -- MADE FOR THE AVID EXPERIMENTER AND ENTHUSIAST

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GEIGER COUNTER PREAMPLIFIER, transistorised -- by I. Newman (VK7)

The very high current sensitivity available from modern transistors suggests that they may be used as current amplifiers in high impedance circuits. This would allow much higher input impedance than obtainable from the usual common- emitter configuration, and indeed, from nominal common-collector ones.

I present here one application of this idea to a Geiger Counter system. Although EEB readers might not be involved with radiation-detection devices, the principles illustrated are readily applicable to other systems.

Transistorisation of Geiger Counter systems is desirable when they need to be made portable, or more compact. The latter situation obtained here, where I needed a preamplifier which would fit conveniently inside of the "Lead Castle" housing of the GM (Geiger Muller) Tube, and powered from the same (500V) HT supply.

The input had to have a resistance of about 10 Megohms (the recommended load for the GMT), with a signal current of 10-20μA. Fig. 1 shows the preamplifier ckt.

The GM Tube may be considered as a switch which closes briefly at frequent intervals, in proportion to the amount of radiation present. Voltage to operate the transistor is taken from the voltage divider R4/R5, the bleed current of which tends to stabilise collector voltage. R2 biases the transistor into its linear-conduction region, so that about 1.5 V appears across the transistor and about 2 V across R3. The value of R2 may vary from one transistor to the next, depending on gain, but is most non-critical. R_1 presents the required high impedance load to the GM Tube. C_1 and C2 provide a low impedance path for the power supply. C2 is necessary only if not already incorporated in the HT supply, or if long loads go to the HT supply.

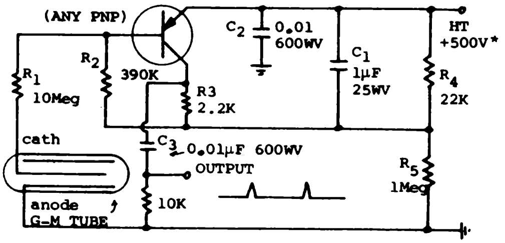

FIG. 1: The preamplifier
*Depends on Geiger Tube plateau voltage.

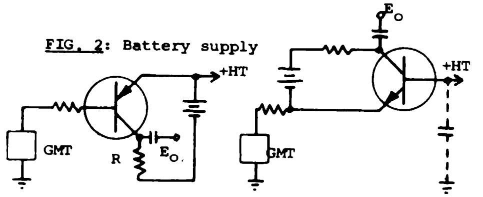

FIG. 2: Battery supply

When the Tube conducts, current flows through the base-emitter junction of the transistor, turning the transistor on, and developing a voltage pulse across R3, which is coupled to the output circuit through C3. If the transistor is driven to saturation, the output pulse will have essentially the full amplitude of V_{ce}, about 1.5 V in this instance. If the transistor is not driven to saturation it will simply act as a linear amplifier.

Fig. 2 represents a simplification of the circuit (for NPN or PNP configuration) For my installation I preferred not to use it, because of the necessity of changing the battery a few times a year; very high and constant reliability was essential. In addition, I needed maximum sensitivity to detect signals from weak radiation.

Fig. 2 could, however, be used where the conditions permitted. The base is not biased, so there will be some loss of signal, but this would be no problem in ordinary installations detecting hard radiation. "E" is a 1.2 or 2.4 V mercury battery, and can be left "on" permanently because of the very low current drain.

R is adjusted to the largest value which gives negligible voltage drop across it at the highest likely operating temperature of the transistor; this might be simulated in ordinary conditions, simply by warming the transistor thoroughly with the fingers. This would apply to a high impedance load.

But for a low impedance load, R would have to be small enough to provide sufficient power drive; the smaller the value of R, the more current drain (though not very much if signal is pulsed). The best procedure is to use a pot and adjust for optimum. The voltage output will depend on the voltage at E. An electrolytic might be necessary across E if pulses very short and if the battery is not immediately adjacent to the transist.

Note that in figs 1 and 2, the actual HT voltage used will depend on the plateau voltage of the specific GM Tube used.

↳ 3

Editor's Note: (continued from p. 2)

This article was received before FETs became commercially practical, and doubtless the same job could be achieved by a common-source MOSFET acting as voltage rather than current amplifier.

On the other hand, the voltage signal for same would have to be obtained across the Tube (or equivalent in ckt), thus necessitating a high value for R_1. In another laboratory it was found that tube life could be increased substantially if tube current were kept high; adjustment of this is feasible when the bipolar transistor is used in series with the tube, but not with the FET.

Incidentally the transistor could alternatively go in the anode lead of fig 1 rather than the HT side (with suitable polarity consideration), and this might be rather more convenient when using a battery, as in fig. 2.

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"SOME PLAIN FACTS ABOUT ANTENNAS, FEEDERS, AND TRANSMATCHES"

-- C. C. Drumeller, W5JJ
((Abbreviated somewhat from Col./Emit. 6/71))

Did you read this article in the May 1971 issue of QST, by Lewis Mc Coy? If not, read it! Encourage others to read it. There is more commonsense in this one short article than you'll find in any fifteen articles on the subject in other magazines.

Reading what Lewis Mc Coy has to say on the subject should go far toward laying to rest the... myths that have sprung up about a simple, straightforward subject...

Lew could have placed a little more emphasis on one aspect of the subject: He could have mentioned more firmly the fact that power can be fed to a partially-reactive, partially resistive load. He says it, but he needed to say it louder and repeatedly.

Some (people) have held that reactance blocks the feeding of power to the resistive portion of the load... and have stupidly ignored the fact that as Lew points out, the reactive element is easily negated by an equal amount of the opposite type of reactance between the feeder and that cheaply-built transmitter that'll load only into a 50Ω nonreactive power sink.

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"Pulling her leg, maybe?"

The lady tourist couldn't contain her curiosity about the service station attendant's missing leg.

"Were you in an auto accident?"

"Nope", he replied laconically.

"Wounded in the war?" she persisted.

"Did you -- "

"Listen, lady", he interrupted. "If I tell you how I lost the leg, will you promise not to ask another question?"

"I promise".

"It was bit off".

((From QRM, Bulletin of the Ozone Amateur Radio Club Inc, Rt.1, Box 185, Bay St. Louis, Miss., 39520, U.S.A. QRM is edited by Jim Pfeiffer, who has published much material in the ARNS Bulletin, and he does a first class job of organising his little magazine. Any Club Editor who wants to a better job on his own magazine should belong to ARNS, and should take a look at Jim's QRM. -- RLG))

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REMOVING INTEGRATED CKTS FROM P.C. BOARDS

Doesn't it make you feel like quitting when you think of all those transistor circuits you have spent hours and hours construting and then the Industry comes out with a dinky little old IC that does the whole works at a price that is more than reasonable? A decimal counter for around two dollars that used to take a man-day of effort, to say nothing of the cost of the parts. And if you want to buy surplus circuit boards, the IC's cost even less.

How to get them off? After trying many methods (and ruining a few in the process) I found that the only sulccessful way for me was to cut the circuit board with a pair of tinsnips reasonably close to the contacts. Be sure each pin is straight up, generally pins 1 and 8 are bent over to hold it in the board before its originally soldered. Then immerse the whole printed circuit board piece in a pool of molten solder. In one second the thing comes right off -- and I haven't lost one yet out of about 50. Easier than using a "solder sucker". (K0NL, Autocall 1/71)

TRAP!

Should you be using a printed-circuit type ceramic variable trimmer in a project, and the circuit stops suddenly, suspect that the trimmer has gone open-circuit. Very nasty?

-- VK6ZCY, W.A. VHF News Bull, May 1971.

ODE ON CODE

C.W. is a tricky mode (but we like it),
It proves we should give up on code
(but we like it),
It makes us mad,
It makes us sad,
It takes the fun from this old dad,
Its the worst darn time we've ever had
(but we like it).

-- W0CCT, ARNS Bulletin, April 1971.

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CONSTRUCTION OF LOW INDUCTANCE CONDENSERS

-- by W. H. Sayer (WA6BAN)

This project was undertaken to find a way to reduce the inductance of commercial ceramic condensers found in the pi-L network of an amateur transmitter (KWM-1). The circuit is shown in fig. 1.*

The fixed condensers as supplied are Ceramic CRL 850's. The 75pF and 100 pF condensers are connected together with a wire 1-1/4" long, and they are parallel-resonant at 124 MHz. Changing the wire to a 1/2" strap increased the resonance to 146MHz. Even better results were obtained by replacing those two condensers with a double-deck fibre glass printed circuit board, the construction of which is shown in figs 2 and 3. This new condenser has extremely low inductance, and I could not find any resonances with the dipper available here ((presumably up to 250 MHz)).

The use of copper-clad board was first described by Collins engineers in November 1968 QST, and it is a good idea. For example, two of the commonly used coupling condensers are 500pF, spaced 1-1/4" with 1/2" copper strap, and they resonate at 50MHz. Did you ever wonder why your amplifier was unstable at 28MHz?

The copper-clad board illustrated in figs 2 and 3 had a capacitance of 18.5 pF per square inch, and it can handle considerable power. With this information, one can design condensers of any desired capacitance, simply by cutting to size, or paralleling as necessary.

((Editor's suggestion: It might be a good idea to measure the capacitance of a given sample of copper-clad board available to you, to ascertain the capacitance per square inch, allowing convenient calculation of capacitance desired in terms of dimensions to cut.))

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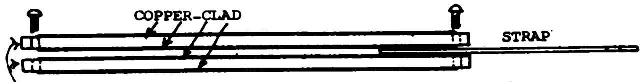
* I refuse to draw this kind of thing! See any Handbook for the circuit--RAJR.



Fibre Glass (Can come in different thicknesses. Determine capacitance of a new sheet in a C-bridge, cut to suit: $C \propto$ Area)

Fig. 3

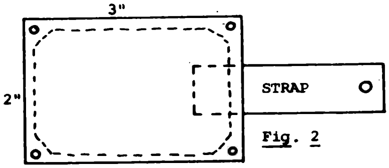


Fig. 2

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LETTER: Another Transistor Manual

((Ref. EEB, Oct. 1971, p. 78))

Last year I started getting an English publication called The Radio Constructor (advertised from time to time in Ham Radio). In the March 1971 edition tucked away on page 495 was mention of a transistor data manual published by the AVO (Thorn) people. The price in the U.K. was £ 4.40 including packing and postage. I wrote to them and was told that the price would be £5.00 stg, including packing and postage. I sent for it and in due course received the publication called "THE SEMICON INDEX, VOLUME 1".

This book gives one line of information on each transistor listed and is very good on European transistors and the Japanese 2SA, 2SB, 2SC, 2SD series (not covered by the Motorola book), as well as the 2N American series. It also gives a substitution list from the CV series, e.g., the BC109 is a possible substitute for the CV 10769.

I just saw this publication in a bookship priced at $20.70, so I saved quite a few dollars by buying it in the U.K. But note that the book lists transistors only. In the back of the book is a coupon for updating. It reads, "New data is continually becoming available. In order that your information may be kept fully up to date, pls complete and return this card. You will then be advised as soon as the next edition of this manual is published (September each year)". I do not know of the availability of any other Volumes, but possibly they will be involved with future increas es in size....

The book is available, as above, from:
AVO Limited, AVOCET House, Dover, Kent,
England, U.K.

-- L. L Sharp, VK4NS, Chermside, Qld.

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To Smoke Fish: Fish prepared like this will make commercially prepared stuff look sick. Get a fairly large box, e.g. 2-ft high, and screw some hooks in the bottom. Then dig a hole in the ground, about 2-ft deep. Place some sawdust (pine, NOT gum!) in the bottom of the hole, and set alight. When it is burning steadily, hang the fish on the hooks, and place the box over the hole. If there should be insufficient ventillation, bore a couple of holes in the sides of the box. Sprinkle a little sawdust on the fire from time to time. Two or three hours are usually necessary. The same procedure can be used for large pieces of meat, if the time of smoking is prolonged suitably. The taste and keeping-quality can be improved if the fish or meat is soaked first in about 10% brine for several days; longer smoking also improves keeping quality, but even brief smoking can afford a real taste treat for a variety of meats.

A SENSITIVE NULL-POINT DETECTOR

AND: The Maddever TVM Resurrected

-- R.S. Maddever (VK3)*

There are many occasions where it is necessary to measure the null-output from a bridge. When it is a d.c. bridge, the detector may be a simple high sensitivity zero-centre microammeter. When the bridge is powered by a.c. (as in the Owen Bridge described by Pitcher in the Sept 71 EEB), the signal may be detected by using that microammeter in a conventional diode rectifier arrangement. But this arrangement lacks sufficient sensitivity for many applications, particularly when it is necessary to detect nulls in the region < 1 µA. Furthermore the rectifying diodes introduce considerable loss of sensitivity owing to the minimum threshold voltage needed to make them conduct.

Why?

Why bother to measure such low currents? Strictly speaking it is not possible to measure a null, because it does not exist! One merely "zeros in" the null point indicating bridge balance. The more sensitive the detector, the closer you can approach to zero, therefore the more accurately to define the true balance point. If you use a 25-0-25 µA meter as readout, you'll do well to discern a 0.5 µA wobble near zero, yet for reasonable accuracy one can need a factor of tenfold better sensitivity than that.

The solution

The answer is to use a d.c. amplifier, and a simple yet good one is shown in fig. 1. Cascaded emitter followers are used in a differential arrangement, to minimise temperature effects.

Nearly any transistors will suffice as long as $Q_1 = Q_2$ and $Q_3 = Q_4$. Computer board transistors work fine, as do SE1002s, with the silicon transistors giving obviously less temperature dependence.

TRANSISTORS	R_{fb}	M	SENSITIVITY
a) 083	-	1mA	0.2 µA for FSD
b)	100K	"	0.4
c) SE1002	100K	"	0.5
d) 2N4250	100K	"	0.3?
		200µA	0.06?

NOTES

a) Noise and drift appreciable here.
b) Reasonable results.
c) Use meter scale 250-0-250 nA.
(1 nA = 0.001 µA)
d) Estimated, higher gain transistor.
e) A more sensitive meter will give even better results, if available.

In condition c, there was a warmup drift of about 20 nA on warmup, and thereafter 10 nA or so per hour. Noise was just discernible. With other transistors, other values of R_b might be appropriate, as needed to produce about 1V across the 2.4K emitter resistors. Base stabilising resistors (base to emitter return) across Q_1 and Q_2 reduce sensitivity and are not necessary if things are reasonably well balanced.

R_{bv} is too coarse for the zero adjust, and if I had bothered to match the two values of R_b more carefully (and the transistors), 10K would have been better.

To use the detector for a.c. one could simply use a germanium diode in series with the meter, and another diode in the opposite direction across the meter + first diode. Or a bridge of diodes could be used for probably more sensitivity.

Note that there would be nothing to be gained here by using Hot Carrier Diodes for rectification; although the HCD have a very large front-to-back

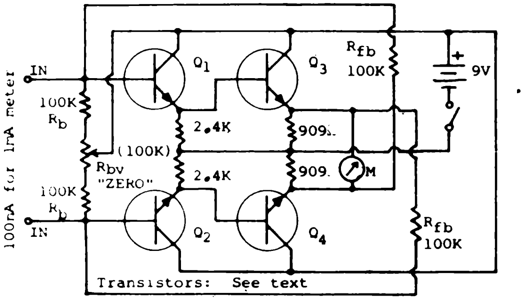
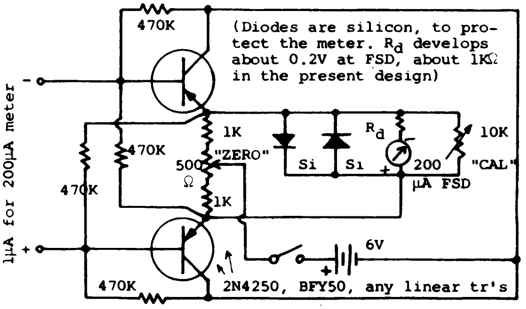


FIG. 1: SENSITIVE METER AMPLIFIER FOR NULL DETECTION



(Diodes are silicon, to protect the meter. R_d develops about 0.2V at FSD, about 1KΩ in the present design)

FIG. 2: PREVIOUS DESIGN (10/67) FOR LINEAR AMPLIFIER

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* As transcribed by RLG from Inspired Scribble. Errors may safely be assumed to be those of the transcriber.

ratio , their forward voltage drop is only in the typical germanium region. Copper oxide diodes would be better, but only if they will respond sufficiently to the high audio frequency of the oscillator which drives the bridge.

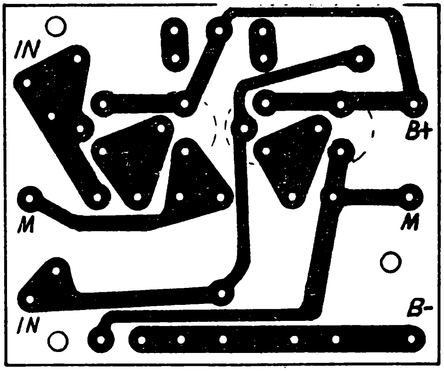

FIG. 3: P.C. DESIGN FOR THE NULL-DETECTOR OF FIGURE 1: FULL SCALE.

The Linear Amplifier, Revisited

Readers with long memories may remember something similar to this in the October 1967 EEB, as the basis for a versatile transistorised voltmeter, or the common-emitter equivalent in December 1967 (said to have less hum pickup).

In that instance it was desirable to use the Fairchild 2N4250 because of its exceptional linearity. We hear that the BFY50 is also very linear.

For interest, the basic circuit of the 1967 article is reproduced here in fig. 2, and the printed board layout for fig. 1 is shown in fig. 3 (full scale).

In fig. 2, only a simple single differential amplifier was necessary for the sensitivity needed. Multiplication of voltage or current scales was accomplished in the usual manner, as well as a conventional ohmmeter circuit.

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LETTER: Novice Licensing (concluded)

With reference to comments on page 102 of your November 1971 issue on the subject of Novice Licensing, I note statements in opposition quoted from the Bulletin of the Tasmanian Division, WIA. The following points are relevant:

(1) Re amendments to the Posts and Telegraph Act: I cannot see this as a major argument against the Novice concept. The introduction of AOLCP and Limited Licence appears to have left the structure of the PMG Department reasonably intact and, one might presume, capable of absorbing the shock of introducing a lower-level licence on the lines of widespread overseas practice.

(2) Re what Novice Licensing would achieve. This is partly answered by the abovementioned reference Pare (2) "IN SUPPORT OF THE PROPOSAL". Note that the greatest supporters of Novice Licensing are persons and groups and Clubs associated with the training of would-be amateurs; the greatest opposition appears to come from individuals who are engaged in electronics professionally and who are therefore, not bona fide "amateurs".... It is an amateur service, and therefore genuine amateurs should not be (influenced by) the professionals, who have skills and backgrounds well outside the hobby field.

(3) Re Novices lacking skills and knowledge to combat TVI and BCI. This is a red-herring which has no basis in the proposals submitted to the WIA Federal Executive. Any form of training and examining to cover the N$_o$vice candidates would necessarily include study and testing by the PMG of topics related to these matters. (Full information on this) in the sample examination paper which the Committee compiled and sent to the Eastern Zone of VK3 Division for comment.

(4) Re lowering of existing high standard of VK operating. This has been thoroughly answered in the Report of the Committee to F.E. The aim of Novice Licensing is to IMPROVE the standards of VK operating and... (it should be noted that the) American experience is that persons who entered General Class Licence (equal AOCP) ((sic)) via a Novice apprenticeship are, in the main, better operators than those who came in directly at General Class level.

In any case the existing method of preparation and examination does not guarantee good operating standards. How many Full AOCP holders could still pass the Code Test at 10wpm after 6 months? The "professionals" with telegraphic experience would have no trouble, of course, but of those people prepared by WIA and Radio Club courses, I suggest that a large proporation have never used and will never use CW again ((what a pity!! -- RLG)), and would fail miserably if the Radio Branch ever decided to re-examine.

Also, in many years of listening on the amateur bands I have heard some pretty shocking examples of poor operating, and have welcomed SSB as providing a means of ensuring that non-amateurs with dual wave receivers do not listen to some of the absolute rubbish spoken on amateur bands by Full AOCP holders of mature years. The poor operating certainly would not be confined to Novices!

(5) Re reducing all Amateur Radio Licensees to HAM status -- this is sheer nonsense and is not borne out in the USA after 20 years of Novice Licensing. The American correspondents state that the Novice Licensees do NOT cause any undue proportion of TVI, BCI or other problems to the FCC; that the Novice Licensees as a group present fewer problems to the Administration than do any other group of licensees. Why do the pessimists in the Institute expect any worse results in Australia?

-- R. C. Black, VK2YA, Springwood, N.S.W.

((Further comments on this subject should be directed at the ample columns of Amateur Radio. EEB correspondence on this subject is now closed.--ED.))

XXXXXXXXXXXXXXXXXXXX

A LINEAR A.C. PROBE TO USE WITH THE RSM SENSITIVE TRANSISTOR VOLTMETER

-- By. P. Lumb (G3IRM)

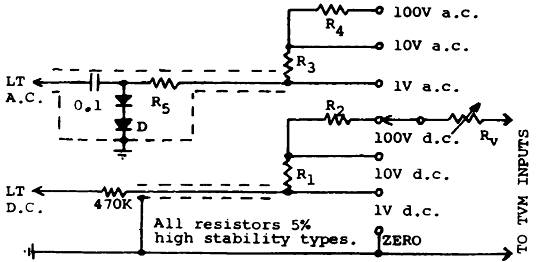
((Editor's Note: This article has been delayed slightly (4 years), with profound apologies, but we haven't had the occasion to ressurect it until the fortuitous reprinting of the Maddever Transistorised Voltmeter in last month's EEB -- which also appeared a couple of years ago in Ham Radio...))

The sensitive transistor voltmeter described in EEB last month was constructed using a pair of 2N2924 transistors. But the power supply polarity was reversed to accomodate the NPN transistors, and a centre-zero 100-0-100µA meter was used. A zener was also used as a calibrating voltage reference, when desired.

The d.c. ranges were compared with an accurate Marconi valve voltmeter and were found to agree within 2% on all ranges and at all points on the scale. Due allowance was, of course, made for the slight inaccuracy of the Japanese meter used in the transistor voltmeter. Zero stability was found to be within ±2% at all normal temperatures, and the stability at reasonably constant temperature was found to be excellent. The meter multipliers covered the ranges in which I was interested, with a sensitivity of nearly 1 MΩ/V.

The circuit thus seems to be good enough to produce superior results even when used witha transistor other than the highly linear 2N4250 (of Fairchild). The function of the d.c. TVM was then extended to cover a.c. low voltages, by adding diodes as shown in the diagram below.

The secret for linear a.c. ranges lies in the use of point-contact diodes. The ones actually used were removed from computer boards, and the same types are ((still)) available in Australia. Almost any diodes may be used, but they must be point contact germanium types. The diodes were seriesed to give higher PIV. If a higher degree of linearity is needed it will pay to experiment with the diodes used, but all types tried have produced an accuracy of 2-3%. Accuracies of 1% in linearity can be obtained by careful selection, even on the 1 V range!



ADDITION OF A LINEAR A.C. RANGE TO THE SENSITIVE LINEAR VOLTMETER, FIG. 2 OF MADDEVER'S ARTICLE.

The meter is first zeroed by setting the switch to "zero" and adjusting the zero-adjust pot. Next set the range switch to 1 V d.c. and adjust R_v for full scale with 1 V d.c. applied to the probe. R_1 is then adjusted on the 10 V d.c. range, and R2 on the 100 V d.c. range.

On a.c. ranges, R5 is adjusted so that 1 V r.m.s. sine wave applied to the a.c. probe produces full scale deflection, after which R3 may be similarly adjusted on the 10 V a.c. range. So far it has not been found necessary to readjust R_v after the initial setting up, and it could well be replaced by a fixed resistor.

The diodes may be reversed (e.g. by a DPDT switch) to read positive (rather) than negative) half cycles input if desired. This can be useful to check a.c. wave symmetry.

Editor's Note:

I have added R4 to the diagram, because it occurs to me that the point-contact diodes, D, might well be replaced by the new Hwlett Packard Hot-Carrier Diodes, HP5082-2800, which have a PIV of 70V each -- double that reported for the HP2800 in the Nov 71 EEB. It is also double the PIV likely possessed by Peter Lumb's point-contact diodes.

This would allow a likely 100 V a.c. position on the switch corresponding to the 100 V d.c. one. Higher input voltages than this don't usually need the high sensitivity of a unit of this sort. One could merely switch the input directly to the meter movement, with suitable multiplying resistors.* Presumably the linearity of the circuit should be as good or better than with the computer board transistors. Would someone like to check on this?

---

*To read a.c. the meter movement must, of course be surrounded suitably by diodes, but for HT these could be HT silicon diodes, all things being = ...

* * *

Moulding public opinion is like driving a mule. First you decide which way the mule wants to go, and then you drive like the devil.
-- J. Pfeiffer, WA5CKJ, ARNS Bull. 2/71

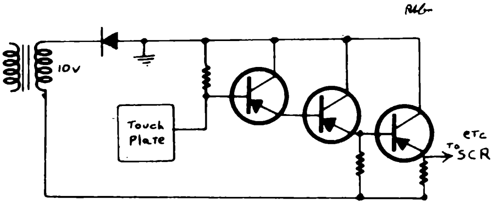
LETTER: Proximity Detectors, Turbochargers, and Fuel-consumption Meters....

It is some time since last I did anything for EEB. A Lightshow thing has run away with all my time for some months now. It is a frustrating business; early last year we developed a triac light-modulator from scratch. It took hundreds of hours and ended up quite a unit. Then a few months later a "Colour Organ" appeared in Practical Electronics, and shortly after another in Electronics Australia. Then a great rash of them in the American magazines. So now all lightshows have triac modulators -- none quite as complex as ours, but still quite workable.

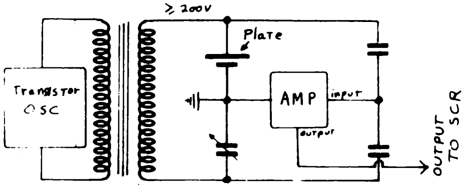
Then VK2AMJ, one of the team, concocted the idea of triggering strobes by flip-flop to get a sort-of phi-phenomenon (apparent movement); previously we had only done this with white floodlights. Over the holidays we went to see Hair, and what awaited us? Alternating strobes! Bah.

I have been working on a number of proximity detectors, but by the time each one was finished, some new development made it less desirable than the old, and so it went on. The results I got were:

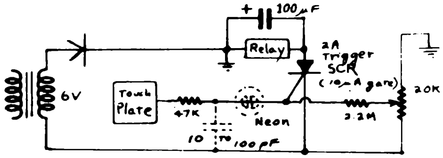
A) Using 3-stage transistor amplifier at $50H_z$ -- sensitivity uselessly low:



B) One-stage transistor amplifier at $10kH_z$ -- touch sensitivity, i.e., about 1/2" for 1/2 V output. Computer board transistors:



C) Supersensitive SCR at 50Hz -- touch sensitivity.

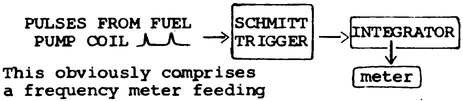


((Dotted-in components are Editor's suggestions. Why not insert FET preamp in this circuit, as per D, below? The larger the touch plate, the higher will be the sensitivity to proximate objects--RLG))

D) FET Amplifier at $10kH_z$ -- never worked at all; ran out of time and patience. Nevertheless it is a promising line, since the big problem is input impedance; actually an FET could be used at $50H_z$. ((Most designs use r.f. osc--RLG))

I do have an idea for converting computer blower motors into superchargers or turbochargers for small-engined cars; depends on how the blades are made. Or if that doesn't work I can use a vacuum cleaner or two in reverse. How would that suit EEB? ((Fine! Just plug in the vacuum cleaner to the nearest mains outlet, tune it up, and drive off!)) Of course if it works I'll build them and sell at a ghastly profit, but EEB readers can have it on the quiet. ((Gee, thanks awfully!))

And then there's a fuel-consumption meter that I've been going to make for a few years; should be easy nowadays with better transistors AND ICs available. The fuel consumption meter would give a constant reading in gallons per hour, or with a bit more complication, miles per gallon. Consider the situation using an electric fuel pump :(only)



This obviously comprises a frequency meter feeding from the fuel pump. This takes care of the fuel end; for miles, some contact must be installed in the odometer.

--D. Brown, Gosford, NSW.

((Good sensitivity for a proximity detector can be achieved by a loop or capacitative pickup to alter the frequency of an r.f. oscillator, and detect the change by a frequency discriminator of simple sort. -- RAJR))

xxxxxxxxxxxxxxxxxxxxxxxx

LETTER: Non-renewal Notice

I do not wish to renew my subscription to EEB. I find that apart from occasional technical discussions which are occasionally instructive but usually assume a wealth of knowledge that I don't have, I find very little of use to me. Maybe my interest in electronics is too limited, but I have no time at the moment to extend its scope.

-- Doug, VK3---

((We always wish to know why people don't renew, and letters like the above are much appreciated. -- Ed.))

xxxxxxxxxxxxxxxxxxxxxxxxx

LETTER: This does gladden our hearts!

EEB is never late for me, as I'm about as far behind as you are!

-- P. G. Nielsen, Collinsvale, Tas.

xxxxxxxxxxxxxxxxxxxxxxxxx

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BOOKS

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REVIEW: (by RLG)

SOLID STATE QRP PROJECTS, by Edward M. Noll (W3FQJ) ("Editors/Engineers"; Sams, 1970), 125 pgs, $US4.25, paper.

In the original version of this item, I had some four pages of discussion on this Review, bringing in opinions from Ham Radio of Oct. 1971, The Milliwatt of June 1971, and Bulletin of the Amateur Radio News Service, March 1971. But I gain the impression that our readers are becoming weary of such large doses of reviews. So, although both the subjects of Reviewing and of QRP transmitters interest me, quite a lot, we'll truncate this presentation substantially.

In the MW, W9SCH notes the general coverage of transmitters presented, with CW units predominating. He thinks it unfortunate that most are at the one watt or less power level, since these would tend to discourage beginners with poor results. There is some difference of opinion on this subject between amateurs, but surely commonse must prevail. If a beginner gets discouraged with 1W, he can get ten times as much output if he uses a 6AQ5 (etc) valve, with the most elementary possible Class C circuitry. Solid-state is mostly for fun, or at higher powers for special requirements such as mobility.

Note is also made of the departure by W3FQJ from printed circuitry, and in this I also concur with W9SCH's approval. "For the usual, one-of-a-kind amateur project, wire-and-solder construction remains more practical.." Criticism is made of W3FQJ's use of coaxial cable rather than tuned, open-line feeders. Although I tend to agree, there is a lot of different opinion on this subject too amonst qualified people.

The ARNS Bulletin Review takes a dim view of the enthusiasm of amateurs who try to break records on a mile-per milliwatt basis, but there are indeed numerous Americans (and Australians) who enjoy the sportsmanship of such a venture. A motto for the QRP Club is "Power is no substitute for skill". The criticism is also made that the selection of components tends to be obsolete as soon as the book is printed, because of the rapid appearance of new transistor types.

This view is one which does (or ought) not worry us much in Australia, because we realise that any suitable transistor will suffice which has the relevant frequency and power requirements satisfied. Slavery to transistor type numbers is... silly. The specifications for transistors can be found by consultation with the various Data Manuals, such as Motorola's impressive "Semiconductor Data Book" -- reviewed in the October 1971 EEB. Or by requesting Short-form Catalogues or specific sheets from the manufacturers: Philips, AWV (RCA), STC/ITT, T.I., Varian (in Crows Nest NSW), etc. For instance, Jacoby Mitchell handles the "U" series of Siliconix FETs which are mentioned in Ed Noll's book and in his Ham Radio articles: U183 (200mW), U197-9 (300mW), U221-2 (800mW), in the $2.50, $5, and $34 price ranges, respectively. One might think that valves might be practical in the > 1W ratings compared to FETs, but....

ARNS says: "Wisely, the author keeps away from receivers; solid-state in this application cannot be kept simple and work well, and the description of an adequate receiver would take another book", and the rest!

The HR Review as usual sticks to constructive comments, noting that the emphasis in this book is on solid-state. Hi.

What is the take-home lesson? From a look at the book itself I conclude only that it is a good one for experimenters interested in low-power r.f. transmitters or oscillators in transistorised form.

In addition to the modern module material described (which is also available here, from Philips, STC/ITT, Plessy, etc), Ed Noll has warmed my heart with a lovely antique valve Tx, using the 01-A (formerly 201-A), complete with photo right out of the dark ages. Reminds me of an ambition I have to build a Tx using only antique valves and antique components (even if I have to wind my own condensers!), powered by wet-cell batteries. CW, of course ((and doubtless varying 10kc every time it is keyed? -- RAJR)).

& See Orr's lovely in CQ Nov 71

Ed Noll has continued his QRPP coverage in his monthly articles in HR mag, beginning with 4/71. Additionally

→ P.15

"The more parking places you provide, the more cars will come to fill them. It is like feeding pigeons." - Sir Hugh Casson

IMPROVED CW RECEPTION (Continued from last month's Editorial)

High Sensitivity through Pulse Detection (continued)

What makes this system so effective is the fact that when the CW signal is present there is very little fluctuation in the d.c. output of the heavily limited output. But when the CW is absent there is considerable output fluctuation, and this produces an increased a.c. which is then rectified and used for control. Thus it is the noise which keys the oscillator rather than the signal — and presumably this gives more reliable results because you can always depend on the presence of Noise, but not always sig!

In Hing's system, the heavy limiting of the input signal produces a "threshold", above which variations in signal are unimportant, and which extracts the most possible information from the signal.

I notice that in Hoff's system described by Kelly last month here, severe amplitude limitation of the signal is also applied, and perhaps a similar principle is being employed as used in "pulse detection", but who can tell? The IC circuit is quite inscrutable, and I have no idea how it really works....

In two recent articles, just the opposite principle is used to good advantage, but I can't help feeling that the pulse detection method is better. The first is "Threshold Detectors in a CW Audio Filter" by A. B. Andes, WB2VXR, in QST 12/71, the main part of which is a two-stage IC active audio filter. In the first stage the signal cannot be passed until it exceeds the threshold imposed by series diodes; the second stage is to smooth the rubbish caused by threshold switching; obviously suitable for CW only.

Selective, Quiet Gating

The other threshold article is "Threshold-gate/limiter for CW Reception" by J. J. Duda, W2ELV, Ham Radio 1/72 (great ideas occur in clusters?), which shows that not only does threshold gating reduce noise, but it also reduces the annoying "ringing" that occurs with the use of very selective audio filters (as useful to obtain higher effective selectivity). The final circuit uses diodes in parallel as well as in series, to limit both the maximum and minimum signal level the gate can pass. The produced audio output thus bypasses both noise and excessive audio.

The problem of distortion (the above-mentioned "rubbish") is avoided by preceeding the gate by both a Q-Mult. and a high-Q audio filter.

W5JJ, Carl Drumeller, comments in the Feb 72 Collector and Emitter, "(Blast) it, I was intending to write (an article) on this, but W2ELV beat me to the draw."
— Further clustering of great ideas ?

A Comparison

I must admit that although the pulse-detector will extract the maximum possible information from the signal, it has a severe drawback: when considerable i.f. selectivity is used ahead of it, the noise pulses are lengthened to the point where they key the audio oscillator.

It is evident here that we are on the horns of the usual Heisenbergian quandry: you can't achieve maximum selectivity and sensitivity without a sacrifice of one or the other — a "tradeoff". One would be tempted to avoid the problem, to get something for nothing by applying the pulse detector to the front end of a Direct Conversion receiver, but that would accomplish little: selectivity will still lengthen noise pulses, whether that selectivity is at i.f. or at a.f. That is one of the take-home lessons of my present state-of-the-art articles.

Thus, the threshold gate systems have the advantage that they can be used with high selectivity systems, and otherwise to get best noise and signal-limiting possible when interference is a significant problem.

Improved Audio Filters?

Several articles have been directed to this hardy perennial subject, but with some curious twists. "The simplest CW Audio Filter" in HR 11/71 (W7DI) simply tunes the inbuilt inductance of a headphone by placing a cpacitor in series with it. While this could not compare to the results from a really high-Q filter, it would be better than nothing, and simple, simple. It also has the advantage for Modern Amateurs that it does not require the alteration of receiver circuits which would reduce the Resale Value of their sets...

In the same vein is the curious suggestion by W1IK in the Jan 72 QST that one's own ears can be used as selective audio filters! His own left ear had a bandpass

(continued, p. 13)

((P.S.; WANTED: ARRL & RSGB Handbooks for beginner. Write EEB.))

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EDITORIAL

(continued from p. 11)

response from 2 to 4kHz, good for phone, and his right ear peaked at 2kHz, just right for CW! So he just puts in a "phone-CW" switch to select the correct earphone lobe. Heh.

In QST for 2/72, VU2JN approaches the old problem of selectivity in a new way. Mechanical and crystal filters are an impossibly expensive dream in India, so he simply built a good L/C low-pass filter and trained his ear to copy CW at 100Hz. The result, saith he, is superb selectivity at miniscule cost. Something to give us pause in our affluent pursuit of Efficiency, eh?

Improvements through r.f. filtering

In a more affluent society, E. R. Cook, ZS6BT describes in the 11/71 Ham Radio, how receiver bandwidth can be limited to improve sensitivity (viz., reduce noise), and furthermore that this improvement improves, the more places you limit the bandwidth. Thus, he was able to obtain a remarkable 30db improvement in S/N ratio by applying r.f. regeneration and i.f. regeneration (Q-mult.) and two selective audio filters. For a really sensitive low-noise receiver he estimates a noise level at -100db for a signal output of 1-milliwatt. "There is nothing more pleasing to the CW DX man than a really weak signal producing a 1-milliwatt audio signal with an absolutely quiet background"!

High-performance CW Processor/P.S. See: Rad Comm 3/72 p.155

This very interesting circuit presented by D.E. Hildreth (W6NRW) in the Oct 71 HR essentially combines both the triggered-oscillator concept with the threshold-gate one, giving an output which has high noise-rejection ability, even output level, and some flexibility.

I.f. is fed into a system which turns a signal into a Frequency Modulated carrier which is then detected in a conventional discriminator (or PLL). This takes advantage of the high limiting possible with FM, and its high inherent noise-rejecting properties as well.

The author admits that this system shares with the triggered-oscillator ones the fact that the output sounds "sterile", and he solves this by inserting a switch which introduces the BFO for "feel" when noise-rejection is not important. Although I should think that the technique of bypassing the "sterile" Box with some original signal (as described above by D. Wherry) would be the most satisfactory way of achieving the human touch, most conditions are not marginal, and it probably doesn't matter.

Means vs. ends (again; c.f. EEB, Dec 71, p. 125):

In much of this discussion -- as indeed as in several of the recent completely automatic CW sending and receiving systems -- there arises constantly the question of ideal ends vs practical means. By exercise of much ingenuity the designer has produced a Black Box which will "process" a signal to get the maximum possible information from it, occupying the least bandwidth, lowest noise, and maximum communication effectiveness. But then he finds (to his surprise?) that the sounds are "sterile", lack "feel", speech sounds as though the bloke "is talking at the end of a tunnel", or is conversing with Donald Duck. So he provides variously palatible alternatives to reinject "feel", shape the response to get somewhat more realism at the expense of effectiveness, or whatever. The phenomenon is not limited to communications; HIFI enthusiasts found that they could obtain more "realistic" sounds from their expensive machines if the middle range of audio frequencies were emphasized. Whence then the super tweeters & woofers?

Inevitably the pendulum swings back, and men begin again to ask not only how to achieve results, but whether the results were worth achieving. Give that some thought the next time you hear someone saying that we'll lose the bands if we don't put twice as many amateurs on the bands (Novice schemes, etc?). Would life on the bands be worth living if QRM was twice as bad (not to mention the intruders)?

If we try to avoid this gabble by sharpening our signals to razor keeness, by squashing our sidebands, by limiting our responses, by amputating "feel", will the resulting cacophony be worth the candle? ((Again, the argument is not restricted to communications: Would an Australia with 75 millions of people be worth living in or defending?)

I say keep amateur numbers down to those who happen by chance to become interested, promote sensible steps to communicate effectively (as well as efficiently) while maintaining human sounds and human values -- AM, DSB, FM, reasonable bandwidth, etc. -- and discourage the clods who would turn the airwaves into an immature merrygoround. If this loses us the bands we'll have lived keenly while we have lived (and I might even join you), but as I have said elsewhere, I don't think that this would lose us the bands. Other far more cogent forces are at work.

INDEED, in recent editorials in CQ and QST there are the suggestions that improvement in satellite communications etc may actually provide the amateurs with MORE spectrum space. I'm not saying that that may be true, but imagine, if it is, would the truncation of human speech and creativity have been worth the results obtained??

WHERE THE DX IS AT! -- by Greg Johnston, VK7KJ

((ED Note: Owing to typing the Contents Page late at night this item was not included therein; with apologies to author. Please mark it in your Contents page, now. Thanks.))

G.M.T.	CALL	NAME	FREQ	QTH/QSL INFORMATION
a) From the Home Station Log:				Skillnadsgatan 37, SF-22100,
0940	OH0NI	Sigge	21284	Mariehamm, Finland.
1250	HK0BKX	Fransisco	14145	San Andres Is.
1345	MP4MBM	Stan	21279	Box 14, Muscat.
1333	VQ9R	Carl:	14211+14250	Box 193, Mahe, Seychelles.
1301	SV0WMM	Ray	21339	Crete.
1457	MP4MBC	?	14171	Muscat.
1500	XW8BS	Ben	14225	Laos.
1325	YB3AAY	Jess	14211	Surabaya.
0645	VR5FX	Bill	14110	via ZL2AFZ. (Tonga)
1019	4S7AB	Sunil	21305	Ceylon. As per Call Book.
1406	JX6RL	John	14221	Jan Mayen; via LA8AG.
1448	YK1AA	Rasheed	14244	P.O. Box 35, Damascus.
1440*	5X5NA	Roger	14167	via G3LQP. *also 1520.Uganda
1122	VQ9MC	Bob	14210	Bx 193, Mahe, Seychelles.
0728	3D2FM	Fred	14313	New VR2 prefix. Via W7YBX.
0648	6D4EB	Emilio:	14268,195	=XF4:Revilla Gigedo.XE3EB
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1157	SV0WS		28595	Dodecanese.
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1227	7Q7AA		28549	Malawi.
1555	TJ1AR		21212	Cameroun.
0541	XT2AF		14162	Voltaic Republic.
0611	CR5XX		14191	Sao Thome.
1600	KG6SW		14250	Saipan. Via W7YBA.
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1200	KC6LG		14242	West Carolines.

NAVASSA IS. KC4DX; May 12th till May 15th:
CW: 3530, 7030, 21030, 28505.
SSB: 3905, 7255, 14280, 28605. QST to W4GKF.

DX-PEDITIONS FOR THOSE INTERESTED:

The VE8RA stint on Wallis Is. (FW8) was to have commenced about March 13th. My latest information gathered in person on March 21st was that the operation was due to start on March 23rd, and run for about a week. As at the time of writing ((24/3/72)) they have not been heard at this QTH ((Editor's apologies for delay in printing this!)).

Minerva Reef: Ed, KH6GLU plans to activate this lump of rock sometime in June. Further information is not available but there will undoubtedly be a 1M prefix or /1M suffix attached. It seems possible that Ed will also include Fanning Is. (VR3) in the itinerary for this trip also. Yrs truly (VK7KJ) will be on Minerva Reef very late in May or early June for about 2 days en route to Tonga (VR5) during the course of a cruise (yacht type) and provided present licensing difficulties can be resolved I will be active around 14195 - 14198 listening on a nominated frequency. A 3-day operation from the Kermadec Islands is also projected for about the third week in May subject once again to licensing. Frequencies as above.

=-=

EDITORIAL (continued from p. 13)

Moralising notwithstanding, it is interesting that in the abovementioned CW Processor, FM is generated by a curious technique: the i.f. signal is split in two; half is fed through unchangedand half produces a DSBSC output (via bal. mod. & a.f. osc) which is 90° phase shifted and mixed with original. The combination of original r.f. with the phase-shifted DSBSC produces FM. How come?? It is a question I hope Dick will discuss for us someday in a "Real truth about FM" article. The factors involved are subtle, and not well treated by the Handbooks nor periodically.

THANKS LES!

Before I go any further, I must say a word of appreciation for Les Yelland of Prahran, Victoria. For some years now he has been sending us a volume of creative and often interesting technical correspondence — and sometimes I despair of being able to publish it all. Les really doesn't always show interest in publishing, but approaches electronics largely as a labour of love. It is a rare and fortunate man who can enjoy work and hobby together.

Les has an unusual profession; he is an Engineer to whom people bring difficult problems. He gets very interested in some of those problems and (often) comes up with some ingenious solution. If you need any such help on a professional basis I'd sayhe's your man.

Les will probably have my scalp for such proselytising, but there you are; its in print and there's nothing you can do about it! Heh.

THE CURRENT AND NON-CURRENT LITERATURE

I have written a bit about certain aspects of this which interest me, and hope to discuss it here next month — with numerous RLG- type comments, of course.

one may note that these articles also tend to amplify the coverage he gave to antennas in the books "73 Dipole and Long-Wire Antennas" (SEE EEB 2/70), and "73 Vertical, Beam, and Triangle Antennas" (c.f. EEB 2/71).

Finally, if you want further basic coverage of FET theory and applications the same author has also published, "FET -- Principles, Experiments, and Projects" (Sams, 1968, $US4.95. See also the interesting Motorola Applic. Note AN-211A, "FETs in Theory and Practice".

These books by Noll can be obtained from Mainland book shops at a bit of a markup, or from Comtec Books (Box 592, Amherst, N.H. 03031, USA) for $US plus 15% for post, or from EEB for $A in the amount shown in $US, which will probably pay for the post.

Whether such material is bought, borrowed, or obtained through libraries (and make sure yours obtains same) -- EEB readers have no cause to complain about lack of good semiconductor literature.

"BLESSED IS HE WHO EXPECTETH NOTHING, FOR HE WILL NOT BE DISAPPOINTED!"

I have any amount of material on the philosophy of low-power communications, euphemistically dubbed "QRPP", but it just doesn't seem appropriate to go into it at length here. The following articles are relevant:

"An Optimum Performance Array...." by Adrian Weiss, K8EEG/0, CQ, 9/71 (See also forthcoming in HR, 1972)

"What do you buy with Power", by Carl Drumeller, W5JJ, Collector and Emitter, 4/69. ("Ego satisfaction")

"Some observations regarding transmitter power levels. The difference between 100 watts and 1000 is not as great as you might think -- on the air communications suffer little from lower power levels" (whew, what a title!), by Courteney Hall, HR, 4/71.

Numerous QRP Tr Tx in QST, and often notes in "Letters", e.g., "Transmitting with (power) FETs", 4/70, or "CQ DX QRP", 5/70; the latter reports that a QSO over 1650 miles on 28760 using a power of one microwatt is possible, and work is progressing toward that goal! 100μW on AM phone has been standard, and 50mW is QRO.

I have had some startling confirmations of this in experience; the amount of power needed for a contact is astoundingly small, if all else is equal (which of course it isn't). If you want to keep up on such things read The Milliwatt (see EEB, 9/71).

Seen recently:

"Why not try QRP?", by Mike Czuhajewski, WA8MCQ, 73, Feb 1972. Summary of techniques for skillful QRPP operating. Amazing.

"CQ DX on 1/2 watt", by Dannis Lazar, KL7FSX, 73, Feb 72. An xtal 6AG7.

"Transistor Projects for the Amateur", edited by Paul Franson, WA7KRE, former editor of 73. Published by 73 Mag ($US3.00). An anthology of circuits, including several QRP and QRPP items. Here is one way to keep up on good literature even if you don't obtain the periodicals. See also CQ's Anthologies which are good although somewhat dated. And doubtless Ham Radio will have a suitable Anthology one day, yea, even EEB no doubt.

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BLOSSOM FEILD

In the summer
Ther's the glorios flowers
Merrily blowing
In the sunshine
I can smell the scent
And the cool wind
Blowing in my face
The grass
Is green and fresh
The water lillyies
Are floating
On the fresh cool stream

-- Katherine Gunther, Tasmania, 1971.

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"Diapers should be washed as soon as possible and should not be left for weeks before being washed." "Do not wash any other goods with the diapers" (Nappies) -- From a U.S. Advert!

WHAT NOT TO DO ?

There was this chap who was servicing a series-wired TV set which was direct-connected to the mains. He had no isolating transformer, so for safety he EARTHED THE CHASSIS. At switch-on a great flash, outpouring of fumes and expletives. And he was lucky at that.

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Radio Branch
PMG's Department, 7005

EEB, 7005
15/4/71

Dear Sirs,

On p. 9 of the November 1970 issue of Auto-Call is an article describing some of the problems faced by radio amateurs in the USA in reference to noise originating from a.c. mains systems.

This has stimulated us to ask your Department for information concerning comparable situations in Australia.

Specifically we are interested in the use made of facilities to eliminate r.f. interference from flashover of outdoors mains systems.

This could be resolved into the problem of answering immediate complaints about r.f. noise (which may occur late at night), and the more pertinent problem of preventing such noise in the first instance.

Yours faithfully, (s) -- RLG

((The referred article was entitled:
LINE NOISE: POLLUTION OF THE RADIO SPECTRUM
and among much else, said:

"Somehow, there has got to be a way to force power companies to eliminate power line noise. It is very easy for them to blame radio noise on the proliferation of electric blankets, butter warmers in refrigerators, motors in furnaces -- every one of which devices is urged upon the buying public in order to generate consumption of electric power!"))

Radio Branch
PMG's Dept, 7005

EEB:
19/5/71

Dear Sir,

I refer to your letter of 15th April, 1971, concerning pollution of the radio frequency spectrum and the measures adopted to overcome the problem.

The Australian Post Office does not possess statutory powers to enforce the suppression of interference caused to radiocommunication services (including amateur radio stations) by faulty power lines, electrical devices or scientific, industrial or medical apparatus which employs radio frequency energy.

All complaints of interference from the abovementioned sources, however, are investigated by the Department which has relied over the years on the co-operation of Electrical Supply Authorities and users of electrical equipment for co-operation in undertaking the necessary action to suppress the interference or to reduce it to a level which will remove cause for further complaint.

The extension of Commonwealth powers to cover the control of unwanted radio frequency radiation from whatever source raises very important issues with which the Post Office has been concerned for some time.

One of the most difficult problems relates to the determination of standards, including an acceptable level of radio frequency radiation, which should be met by apparatus which is a potential cause of interference. Considerable work on the development of suitable standards including those with which the measuring instruments should comply, has already been carried out by the Standards Association of Australia, but much more remains to be done in this direction.

Those concerned may rest assured that the Post Office has not overlooked this important aspect relating to the use of the radio frequency spectrum and that its endeavours to find a satisfactory solution to the problems involved, will continue.

Yours faithfully,
(s) H. Melling, Superintendent

ITEMS FOR INTERESTING REFERENCE: Noise Blanker in EEB, July 1970

Amateur Radio, May 1971, p. 2: "Federal Comment" by K. E. Pincott, VK3AFJ, on the subject of electrical noise pollution... and the rest.

Radio Communication , Oct 1969, "Television and Radio Interference Trends" by J. Pat Hawker, G3VA.

Ibid, Jan 1970, "Interference and the Amateur" by E. M. Wagner, G3BID. "If this power line interference is not checked before it grows further, it may well become one of the most serious menaces to amateur radio". etc.

Ibid, Jan 1972, "QTC" Comment announces a range of 9 radio suppression kits by Philips to cover various types of ignition and electrical circuit interference...

QST, July 1970, "Power-Line Interference Its Causes and Methods of Location", by R. G. Holloway, W4USQ. It can get complicated!!
Ibid, May 1971, p. 47:"Success Story, Riddance of Power-Line Noise" by V. Wallace, W7SJZ. CRO analysis helps, and a Transistor Radio to track it down. QST makes frequent reference to a classical article on this subject, by W. R. Nelson:
"Electrical Interference", QST 4-5/66.

Amateur Radio Techniques, 3rd Ed., by J. Pat Hawker, G3VA (RSGB). On p. 126+ and 169+ are discussed various methods for blanking or phasing out interference once you're stuck with it. Aside from the Noise Blanker (EEB July 1970, very good), he describes my old favourite, which appeared in older editions of Orr's Radio Handbook (but not recently) Take a look at A.R.T. p. 169 and 126; it is an absolute devil to adjust, but it can reduce an S-9 noise signal to S-2; if improperly adjusted it can reduce the desired signal too, but not necessarily. Its more fun than a crystal set, and twice as useful. I won't reproduce the diagram here, because anyone who is at all interested in radio will have a copy of this book (A.R.T.). (See Review, EEB, Feb. 1971). I am told that a new edition will be forthcoming very soon....

SEE EEB, Dec 1971, P.131

LETTER: Noise Figure and Commonsense

A subject which interests me considerably is the current controversy on receiver front end design -- valves vs. semiconductors with emphasis on low-noise produced in the first stage.

From a practical viewpoint I don't see that all the tub-thumping is warranted. What is the point of having a receiver so quiet that one can hear the galactic noise, when man-made interference generators all around are putting in an S8 signal (with a 2.5 kHz receiver bandwidth)?

Over the past fourteen years the Sydney County Council has made my area practically birdproof with high tension lines, and the abovementioned S8 noise signal is quite common here.

So, quite frankly, I can't see a parametric amplifier doing much for me, nor for most VK amateurs, the great majority of whom live in cities or large towns similarly festooned with Supply Authority "decorations" -- all radiating with high efficiency.

I have, on occasions turned a 3-element 2 metre beam in the direction of a 256kV transmission line about a quarter of a mile away. The noise is invariably horrendous.

Some years ago I made up the late J. L. Reinartz's Carrier Level and Modulation Indicator (EEB, Oct '71, p. 88). It seemed to work OK, but I could never see much point in reversing the connections of D-1.

Incidentally, tell Rod that Lyndhurst is in Victoria (not N.S.W.), about halfway between Dandenong and Cranbourne.

-- Reg Fookes, VK2AKY, Caringbah, NSW.

((The reason for reversing the polarity of D1 is to allow measuring positive or negative modulation peaks. It is the negative ones which are relevant for overmodulation, but voice waves are usually asymmetrical. There can be advantage in switching D-1 to measure positive peaks, and switching the phase of your speech amplifier to obtain the highest positive-modulation level. If a peak-expanding system is employed, that measurement can also show how much expansion is being achieved.
((Incidentally, Reinartz was also responsible for an interesting peak-expanding system, essentially being the circuit shown on p. 88 in the second column, but with the resistor considerably less than 22K, e.g. half the P.A. load resistance. I want to reprint that article, but first I'll have to check it out, because I have heard from a U.S. Engineer that the reasoning behind the design is in error. But with the work load of EEB it may be some time until that happens. If anyone wants to check on this I'd be very interested to hear results. -- Ed.))

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TAPE RECORDER TRICK

-- R. V. Anderson, K0NL
((Amateur Radio News Service Bulletin, 8/70))

Julian's book review in this issue prompts me to tell you about a tape recorder trick I've used for years. Its easy to do and the result is remarkable.

Pick a very slow, hymn-like, tune. My favourites are Silent Night, and Now is the Hour. From the regular music, write a single line melody backwards. On this music, add only the root note for the bass. This is all that is necessary to begin with; you can add chording notes later if you wish. Play this on the piano and tape record it.

Play this tape backwards on the tape recorder. Since you have not rewound the tape it will be necessary for you to thread the tape with the "wrong side out", and the tape will pick up the recording through the thickness of the tape (It will too work!). Since you have recorded the tune backwards, and have played it backwards, it will not come out forward, but what a difference! It will sound like an organ.

The reason: when a piano note is sounded, there is a thump and a fading away of the note. Played backwards, the note fades in, rather than out, making it sound like an organ.

After your first success with the simple notes, you can try adding more chording notes to the original, but the playing of the tape with the wrong side out destroys some fidelity and it may be found that additional notes cause more confusion than music.

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HOME MADE SMALL CLASS A TRANSISTOR OUTPUT XFRS.

The following information is drawn from an article in The Microphone (Journal of the Australian Tape Recorder Society), Sept/Oct 1970, by Vernon Kerr: "A mono/stereo Monitor Amplifier"

The amplifier itself is simple, with a BC108 (NPN silicon) direct-coupled to an AC128 (PNP Ge, 260mW at 25°C), and powered by 9V/12mA. The bias networks follow quite conventional design, though I have also seen another version of this simple system which took the bias supply resistor of the first transistor from the emitter of the second for negative d.c. feedback, rather than to supply. The load is fed from an output transformer in the collector of the second stage.

The main point is that, although such small amplifier designs are readily available from circuit books (or through simple Grandma's Transistor principles), for headphone monitors or even for good low-power speaker application the output transformer is not always at hand.

For those, therefore, who don't care to enter into the complexity of complementary symmetry amplifiers, here are the details for winding your own output transformer to run from the collector of a transistor giving about 100mW:

"The cores used were of Japanese origin and measured 3/8" by 5/16" approximately on the centre leg, being an E and I type of lamination. Make a small bobbin to fit the 3/8" x 5/16" section and wind on 415 turns of 30 gge enamelled wire; this is the Primary (400Ω). Run a strip of paper over this winding and then wind on a further 56 turns, which becomes the secondary or output winding (8Ω)." To run the output into a 3.2Ω voice coil instead, decrease turns on secondary to 35, or indeed for any desired output impedance (within reason), simply apply: $(N_2/N_1)^2 = Z_2/Z_1$. Also within reasonable limits this can be applied to other primary impedances, prorata.

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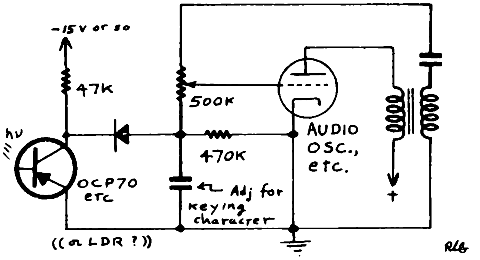
LETTER: Light Beam Keying, RTTY, and SSTV

I was interested to be reminded of the problem of keying without voltage on the key (EEB Sept 71, p. 67), and of course the beam of light is the answer I have used for many years in my paging transmitter. The circuit is shown below



The grid is biased off. When light falls on the OC70P (or LDR etc) it conducts, shorting the bias voltage, and the valve is allowed to operate normally. You can, of course, do the same thing uning a transistor instead of the valve (an NPN is a direct dual, or even better an N-channel FET), and arranging suitable voltages to cut it off.

This kind of system lends itself particularly well to automatic message sending. If the desired message is produced by cutting appropriate slits in a thin aluminium disc, the disc can be rotated slowly, and the slits used to allow light from a small lamp to fall onto the OC70P of the above circuit.

For even more versatility you can use more than one light, and for each a corresponding OC70P and set of slits on the disc. You can then choose the desired message simply by running power to the appropriate lamp.

Although this idea was used for an automatic paging system, there is no reason why it could not be employed for automatic message sending, e.g. for CQ's. RLG suggests that for the kind of QSOs so often found on the air, and particularly for contests, much effort could be saved by preparing a disc containing concentric lines having whole stereotyped messages on them -- containing the information about one's name, rig, location, and the weather.

Conversely, a similar system using a photographic negative on the wheel, might be hooked to an amplifier rather than oscillator, to give equivalent information directly by voice. (RLG)

I have just got hold of some PLLs and am hoping to be able to make good use of them as a RTTY demodulator; it sounds like the answer to a prayer, what with no fine tuning needed, and it will lock onto any shift by itself. Of course I will have to evaluate the problems of QRM where it will probably lock onto the interfering signal also. But it would appear that this may possibly be overcome by using a notch filter. I will be interested to see what EEB has to say about PLLs in ~~the next issue.~~ due course

((We have deferred discussion about PLL's themselves for several more issues, because of the considerable content which has evolved from consideration of detection systems and the relationship between Direct Conversion and other systems (e.g. Superheterodynes!). But the current literature is full of the subject, and can be investigated as per our Reference List in the State of Art series IV. -- Ed.))

I tried to use an active filter in the RTTY Unit, but without success. I am not sure why it did not work, but more on this anon.

I have just got interested in SSTV. Norm, VK4NP up here has one going, and the results are very good on DX; it was based on the recent article in QST which uses transistors. He found that he got better results with some slight modifications, notably dispensing with the IC multis, and using some 15c computer-board transistors...

I note that there are a couple of IC modules now which will circulate about 4000 bits, at a reasonable price, and would convert SSTV into fast scan pictures. That is to say, after one frame had been received and momorised in the system, it could then be fed to an ordinary TV set -- giving only stills, of course. Amazine.

The more common method is to use a long-persistence CRO tube, and same are available from Disposals for about $6, and are in a nice case with the EHT transformer which can be run from a 15 V d.c. supply with a power transistor.

If you have any great interest in this, I will get Norm to send you a photostat of his setup circuit, as modified from QST. He is at present playing with a 931A photomultiplier valve in a flying spot scanner.

-- K. M. Kelly, VK4MJ, Surfers Paradise, Q.

((Yes, certainly we are interested in everyting interesting, but since the above letter was received there have been several big articles on Slow Scan TV in Amateur Radio, and we would be interested only in information which did not duplicate that. -- Ed.))

((P.S. In the November 1971 HR, and in the Dec 71 through Feb 72 73 there are several articles describing automatic sending (and receiving!) of CW, and various memory systems))

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IF YOU DRINK A GLASS OF BRANDY EVERY MONTH FOR 1200 MONTHS, YOU WILL LIVE TO BE 100 YEARS OLD. ((W8QUR, ARNS Bulletin, 8/70))

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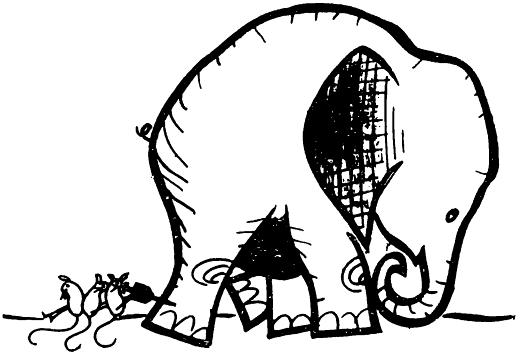
The woman opened the door of the refrigerator and saw a rabbit. Says she, "Rabbit, what are you doing in the refrigerator?" Says the rabbit, "Is this a Westinghouse?" Says the lady, "It sure is". Says the rabbit, "Okay, I'm westing"...... The lady had just stripped off her clothes and was ready to jump into the bath tub when the door bell sounded. Tiptoeing to the door, she asked, "Who is it?" Came the reply, "Blind man". Seeing no particular need to dress for a blind man, she opened the door and let the man in. After which the man says, "Okay, lady, where do you want me to put the blinds?" (A/C, 5/69)



LETTER:

THE ARRL HANDBOOK: A Rebuttal

-- by D. A. Blakeslee, W1KLK

It is indeed difficult for a reviewer to write about a book without injecting his own how-I-would-have-done-it ideas, even though he might not have had the experience of actually producing a text book. Such seems to be the trap that your reviewer of the ARRL '71 Handbook (EEB, Sept 1971) has fallen into. The new ideas and improvements embodied in this book have been lost in a series of theoretical I-might-have-done paragraphs.

The review contains significant errors of both omission and commission. Your reviewer states there are approximately 12 new construction projects, when in fact there are 25. The rewrites of the ssb and measurements chapters done for '71 are not mentioned. Likewise, the use of non-glare paper and the production of the book by 6 editors, rather than a single person, as with previous editions, are stories left untold. Nor are the facts recounted that the RTTY and receiver-chapter construction projects are mostly new material. No mention is made of the novel 6- and 2-meter power amplifiers with their unusual tank circuits that have been added for '71.

The ARRL Handbook has always been a practical book, which is the secret of its success. More than 50 percent of each edition is purchased by nonhams (sic) -- librarys, engineers, research and development organizations. Why? Because few books dispense with the theoretical possibilities and concentrate on how-to-do-it information useful to a person intending to make something! It is indeed strange that a publication which has the subtitle of Commonsense Electronics should suggest that a book for amateurs needs more on radiophysics. Indeed, your reviewer, in making the suggestion, seems to have missed the point that the RSGB Handbook, which he lauds frequently, contains 34 pages on basic theory, while the ARRL book has 43. One can only wonder at what the reviewer had in mind.

The EEB reviewer states that a new Handbook once every three or four years would be sufficient. It is true that about one third of the material in the Handbook changes each year. Yet, if this policy had been adopted in 1970, then an amateur would have to wait another year or two to read about the MOSFET, op amp, digital IC, PWRFET, linear IC, and solid-state power amplifier information which will be contained in the 1972 edition released later this week. Thirteen chapters have been rewritten for '72 -- personally, I wouldn't want to have to wait years to find out what the latest circuits and techniques are for my hobby...

In the review of the ARRL Handbook, your publication has reprinted a piece from 73 Magazine (May 1971 issue), apparently as a justification of your own reviewer's views. 73 has long made an anti-ARRL stand policy... ((the remainder of this paragraph has been omitted on the advice of our solicitors -- RLG))

COMMENT by R. A. J. Reynolds, VK7ZAR

Other than to note that to an unbiased observer the review by D. Stivison which followed mine, appeared to be a rather favourable view of the ARRL Handbook, I see little point in a detailed reply to the above letter.

The point at issue is not a matter of detail but of philosophy of approach. Is the emphasis on a superficially "practical book" the approach needed by the modern amateur? I suggest that the following article (written some months ago) addresses itself to the underlying approach needed to transform a practical Handbook into a good Handbook which unifies theory and practice.

We desire only to help authors to understand what the technologically aware amateur needs in this age of explosively expanding technology, much of which is excessively commercial!

COMMENT by RLG:

Mr. Blakeslee (who has contributed some technically admirable material to QST in these years) also included a number of comments on the 1972 ARRL effort, chapter by chapter. These will be printed here as space becomes available. At that time perhaps one of our able readers (or more than one) may wish to buy said work, and comment on it with reference to that list and with reference to the material presented herewith?

OBJECTS AND REQUIREMENTS OF AN AMATEUR RADIO HANDBOOK, Part II, (c.f. P.110)

-- R. A. J. Reynolds, VK7ZAR

General dissatisfaction with the various handbooks which are available has lead me to consider what I expect within the covers of these volumes. At first I thought that I could write down a "formula for contents" in just a few lines, but now I am not at all surprised that editors have trouble keeping everyone happy.

My profession is in Radio Communications. Naturally I would like to see a Handbook which would contain information pertinent to my work. But we have available already any number of proper entineering reference works, and my interests as a radio amateur prompt me to ask about the requirements of a text which would be useful to engineers interested in radio as a hobby, and to amateurs who find the modern aspects of radio uncomfortably full of engineering.

Aside from the theoretical aspects of Handbook content, there is also the necessary matter of production economics: generality, saleability, and perhaps as well "Reviewer Appeal".

I am convinced that amateur radio has come to the stage where there is room for two handbooks. Over the years, the various editors have tried to cram more and more advanced information into the 600 or so pages that the publishers have apparently allotted. The result of this is that inadequate coverage has been given to most facets under discussion. One handbook will emphasize thoery whilst another will emphasize practical construction. But even if you have both of these books, less information will be available than would be contained in two complete books, because the compromise-books will have important areas of overlap.

If two complete books were available one could cover theory and the other, practice, this being the easiest way to split the subject.

I consider that the design and theory book should be revised every 5 to 8 years while the construction volume should be rewritten (rewritten, not merely revised) annually. More on this aspect later.

Suitable titles for the two books could be the subject of many hours of discussion, but one could be "The Amateur Radio Designers Handbook", whilst the other could be "The Amateur Radio Constructors and Operators Handbook".

The Amateur Radio Designers Handbook

I liken this book to the well known Australian "Radiotron Designers Handbook" edited by the late F. Langford-Smith, translated into the amateur field from the domestic field and of course, updated. Remember that the last major rewrite of the RDH was in 1952 -- and yet the relevance of this kind of book to our field is shown by the amazing demand for it in these intervening years, and to the high relevance of the basic theory even now, even though the original dealt only with valves.

In such a book I consider that specialist individuals should write on each subject since it is more than can be expected of one man to write authoritatively on all the facets of Radio theory and practice.

This book could consist of chapters as follows:

1. Basic electrical theory.
2. Elementary communications theory, including such subjects as information rates and qualitatively only, the effect of noise.
3. General principles of Modulated, and in particular, R.F. communication.
4. Propagation. A fairly detailed discussion of this subject, both quantitative and qualitative. Work of people like Bullington and the inclusion of the more important nomograms for 30 to 3000 MHz ought to be included, at least in outline. I have noticed a tendency in many handbooks to mention ground waves and skywaves, and then go into quite some detail on the mechanism and prediction methods of 'scatter. This means that the average amateur knows very little of the path calculation method for intermediate paths and the odd k greater than 4/3 hop.
5. R.F. Transmission lines, plumbing, matching, etc.
6. Aerials, from short wires to horns
7. Transmitters. All types.
8. Receivers. All major types.
9. Modulation systems: AM, FM, NFM,

SSB, SSBSC, DSBSC, RTTY, TV, etc!

10. Power supplies.

11. Testing Methods.

Either in the above or in smaller chapters should be discussed the varieties of mixers, filter design, the relative stability of the various known oscillator circuits (e.g. how frustrating it must be to the reader to see presented a wide array of similar circuits, with scant indication of their relative merits!), noise suppression, speech compression and clipping, and even satellite technology. Other subjects would become self evident.

It is of primary importance that the intention of such a book be made clear: that is, that it be directed towards amateurs. Otherwise this handbook could be labelled as a very incomplete but general communications engineering handbook. In that form it would be read by neither amateur nor professional.

The relevant material could be put into one volume which would not become outdated quickly, as far as the amateur population is concerned, as it could be written covering state-of-the-art developments as they are available to industry.

I am afraid that it ought to be said out loud, and admitted freely, that amateurs no longer lead the development field. Trained and experienced men and women are developing systems and providing solutions to technical problems for industry in excellence and volume that no amateur organisation (nor individuals) could finance nor hope to achieve by sheer luck.

Given this premise, revision of this book would be necessary only every 5 to 8 years, if future developments progress at much the same rate as they have. If you take umbrage at this idea, merely scan the amateur literature of the past half dozen years and look at the volume of "new" ideas introduced into it, which have been standard industry practice for ages!

The Amateur Radio Constructors and Operators Handbook.

This book would be just what its title suggests. It could run along similar lines to those in "ARDH" and would serve to give examples of construction and operation of all the facets of amateur operations. Becauseof component development (e.g. new valves or semicons) and because of the changing attitudes of the amateur operators themselves this book would need to be updated annually, and not necessarily superficially!

A by no means minor value of this procedure would be that variation in equipment design from year to year would promote experiment which ought to be a primary aim of the amateur. And, whilst retention of old circuits may not be avoidable economically, it should not be encouraged!

The book should aim at a great diversity of equipment types, and major items should lend themselves to variation by the amateur builder.

((Above all, this book should correct a silly situation now existing in present handbooks. It should present a thorough discussion of the principles of general equipment layout and mechanical design, as applied to amateur practice. And then in the actual constructional chapters there will be scant need to go into much detail about the many layout problems which so clutter current handbook designs. And much the same consideration should apply to "Adjustments". A screw-by-screw adjustment instruction admits only that the constructor is an appliance-builder. If the ARDH has been read and understood such detail will be unnecessary; and if it has not been so read, the amateur has no cause to attempt to build the equipment in the first instance! And of course the possession of nominal test equipment goes without saying -- or it ought to. How many times does one see in the literature (particularly American) statements of the type of such-and-such must be done, since a proper adjustment would require an oscilloscope. Indeed!! -- RLG))

Finally, this book should also contain the component reference section. Valves, diodes, transistors, and associated components are being produced continually, and in order to keep up to date they must be placed in the "annual". If this proves to take an excessive amount of room, at least the latest and best should be included -- noting that the best need not necessarily be the latest.

Some Rebuttal in Advance

How is one to relate the ARDH and ARCOH on one hand, and full engineering texts on the other? The problem here is the definition of "engineering". I am quite aware of the different categories of professional people and technicians who label themselves "engineer". As far as this discussion is concerned, engineers fall within the following categories:

(a) Pure theoreticians.
These are the exact engineers who are normally only corned with one partacular field, e.g. channel/information capacity in the presence of known noise.
(b) System design engineers.
These work with building blocks, e.g. Tx: Ae: Path: Ae: R_x, usually in an overall control of an installation group (my own case), or as consultant.
(c) Equipment designers.
Usually employed by industry.
(d) Maintenance engineers and higher order Technical Officers.
These people actually come in contact with the equipment on a day-to-day basis, but normally only oversee the work of others.
(e) Technicians.
The so-called "hands and feet".

The level of the average amateur is somewhere between the top and the bottom of this list, and engineering texts are directed at each level by various writers and organisations.

So where does the ARDH fit in? Certainly there are texts in great numbers for (a) but you need a full library to cover all facets that the amateur might encounter.

Whilst (a)-category engineers are usually University-research types, (b)-category engineers are more usually Uni-qualified people with experience, who have made their mark as equipment designers, for example. I place myself in this category, and I find that I use nearly every text available, and my biggest problem is "where to find the appropriate book?".

Category-(e) are the "trained manipulators" and not engineers, in my opinion. So... I consider that the average amateur should be somewhere between (c) and (d). As such, he needs all the information available to this category of engineer without the tedium of deriving every equation, or the detail of much of the motivation. The amateur does not need general advanced mathematics, nor does he need to know all about wave mechanics in a waveguide ((though in these days wave mechanics are being taught in Matriculation High Schools)). If his experiments lead him into these details, then most libraries of a technical nature will have the specific papers and volumes that he requires.

Yes, if all amateurs knew all about communications systems, it would be a good thing, but it is too much to expect an amateur who at best can only spend a few hours each day on his hobby, to attain the knowledge and competence of a full-time engineer who has done four or more years attaining his B. Eng. degree, and more years of consolidation and gathering of experience.

Amateurs do, however, need access to the fruits of this information, and the ARDH would be such an authority (or should be). So, the aim must be as much information as possible in as comprehendable a format as possible, whilst keeping this information within the bounds defined by the experienced amateurs who are at the forefront of their hobby.

Professionals will have higher level references for their specialties...

A Summary

By way of a summary, consider the advantages of a two-book scheme as outlined above:

PRO:

Waste of theory reprint avoided.

Two books of 450 to 500 pages would be convenient to handle, when compared with the complete material printed in a single book.

Manufacturers would be kept happy by the promotion of particular components in the annual ((BUT components must be specified by actual value and content, and not merely by reference to a manufacturer's part number! -- RLG)).

The needs of a greater section of amateurs would be filled. We do not here consider the needs of "hams".

The introduction of more Radio Engineering in the theory book would provide needed technical education for amateurs and prospective amateurs.

CON:

The removal of theory from the construction book could mean that those amateurs who would buy only the construction book would no longer be "subconsciously educated". But do in fact such people trouble very much with the theory section of present texts?

There could be some sales conflict between the monthly magazines which concentrate on constructional articles, and the "annual". I leaveit to you to decide whether this would be a bad thing..

Since the ARDH would cover several years worth of theory, the total income to a publisher from the sale of the two books might be less than that from the sale of a single volume containing repetitive theory and a bit of new practice. Since no publisher would likely admit this in public the question cannot be resolved

-- except perhaps by the non-appearance of the two-volume scheme outlined here.

Many amateurs would ignore the ARDH on the excuse that it is too technical, and would turn only to the older style of handbook for the bit of theory they want. This group would fall behind, and would constitute the "hams" about which this discussion is not concerned.

The ARDH may not be sufficiently different from, say, Terman to command real attention from the buying public. Needless to say, this would depend on the skill of the Editor, who ought to be of the calibre of, say, Langford-Smith.

XXXXXXXXXXXXXXXXXXXXX

LETTER: Reviewing, a balanced view....

I would like to say how much I admire your approach to book reviewing and commenting on published material, since you obviously think about,

a) What the reader really needs, and

b) What the author is trying to achieve

--rather than the all too usual "book reviews" which are so often just revamps of the publishers blurb. I always get the impression that you take some trouble to go through the books before rushing in~~g~~t comment...

Anyway, keep up the good work of saying what you think about publications. Far too many people just take them for granted without questioning whether they are good, bad or indifferent.

-- J. Pat Hawker, G3VA, London.

YYYYYYYYYYYYYYYYYYY

LETTER: The Essence of Reality?

Thinking again of the EEB, while I agree that you should resist all attempts to let it become a Journal, with papers involving references to abstruse research in remote areas, I still feel it plays a part.

The picture EEB brings to mind is that of a sort-of scientific Ben Johnson and his cronies, with informal discussion and much ale -- something I feel should be much more evident than it is in scientific circles .

I can remember a Saturday afternoon spent at an Outpost of a University when a group gathered around a table with the odd dozen to discuss, of all things, the specs for a data transmission facility. I feel much more was achieved than at six preceeding formal conferences.

-- C. Pitcher, Northcote, Vic.

XXXXXXXXXXXXXXXXXXXXXXXX

LETTER: The Postal Semice (?)

Being Secretary of the local Fire Brigate, two years ago I received notice in mid-February that fire restrictions were to come into force in mid-December -- of the previous year!! As it is normal to await official notice on these matters, we could easily have burnt out the entire country-side, been jailed for so doing, and fined thousands of dollars for so doing! Whacko the PMG Dept!

-- John, VK3---

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LITTLE RED VOLKSWAGEN

((Florida Skip; QSP ARNS Bull.4/70))

Friends of Walt and Alice Linder, W4KTE went to the circus near their home in their red Volkswagen. They parked the bug near the circus and went in to enjoy the show. Afterward, on returning to the vehicle, they found the front end of the car was crushed in (the front of a VW is where the engine ain't). The pair were naturally concerned about this tragedy, so they went to the circus office to inquire about the mishap. "I'm glad you came in," said the circus manager. "I'm afraid that the accident is our fault. You see, some of the elephants are trained to sit on little red stools. The elephant manager was walking a line of elephants past your car when one of them broke from the line and...."

Well, after clearing up the mystern, the pair started home, when they noticed an identical red Volkswagen passing them at great speed. This VW had its right side crushed in. Another elephant? After a short while our heroes were stopped by a highway patrolman. Ensues the following dialogue:

Couple: "What's the problem, officer?"

Policeman: "You are under arrest for causing an accident and leaving the scene of that accident."

Couple: "Accident? We haven't been in any accident."

The patrolman smiled and asked, "Just how do you explain the crushed front end?"

Couple: "That's simple. An elephant sat on it." OH, NO! == Good news though; our owners of the little crushed red Volkswagen were cleared by the circus manager. We trust that their car is fixed.

XXXXXXXXXXXXXXXXXXXXXXX

Quote without comment

"Take a man by himself and there is generally some reason to be found in him, some disposition for good. Mass him with his fellows in the social organism, and ten to one he becomes a blatant creature, without a thought of his own, ready for any evil to which contagion prompts him. It is because nations tend to stupidity and baseness that mankind moves so slowly; it is because individuals have a capacity for better things that it moves at all." -- Henry Ryecroft ("Private Papers")

SWOOP -- by Elise White (YF/K0CNV)

((From the Bulletin of the Amateur Radio News Service, January 1972, p. 8))

A young bride of our acquaintance recently became a member of the SWOOPs.

Her initiation was sudden and violent. In the daze of a new husband and house she quickly said yes when he suddenly came up with the idea of renewing his licence.

He found a receiver that looked like a boat anchor and proudly dragged it home. This was rather a soul-shattering experience, especially when there wasn't a table in the house that would hold it. Being an expert scrounger, he came up with a slightly damaged hollow core door and proceeded to build an operating table. It didn't quite match the decor but was big improvement over the card table swinging and swaying in the breeze.

Since their anniversary was approaching, she decided he needed a transmitter and through conniving got his dream. Of course, it had to be hid out elsewhere, but on the big day there it sat.

By now the cherished den looked like a typical ham shack -- you know, "I don't know what I'll use that for, but I might need it some day so I'll take it."

The next project was a tower permit, and two sections of tower erected. The neighbours started screaming about TVI, aesthetic values and the usual accusations. This can be soul shattering, especially when the neighbours on one side use your front lawn as a shortcut to his driveway, and the man on the other side believes the sidewalk is the only place to park.

So a couple of friends arrive and jack up the tower a couple of sections and hang the Inverted V at 20 feet. Friend husband comes home early and immediately rushes to the ham shack. He can't get ((a contact)) over the fence, so he decides that since its dark by now he is taking the antenna to 40 feet. He climbs the tower. He loves towers 50 feet on an 11 story building 100 feet from ground to top, nothing to it, a mere 40 feet is just easy to climb. No muss, but wait a minute! Don't tell me those little bitty lights are just 40 feet down. What's that light flashing down there? He clings to the tower like it was a bosom buddy and ignores the pleas of his bride waving a flashlight to return to the ground. All pleas failed so she resorted to prayer.

He finally returned to earth and has sworn off towers, but the improvements haven't ceased.

The next edition was a 4-foot wagon wheel electrified. It was sanded, stained and ready to hang. One slight problem -- the ceiling wouldn't hold it. This called for remedial measures in the attic.

At last our pride and joy is ready to be mounted. One step ladder and two people trying to raise the wagon wheel. Thereis only a difference of 2 feet in height and 3 steps on a step ladder. She almost got the fixture for a collar.

Yes, amateur radio is wonderful. Good Luck, gal, life has just begun.

* * *

Quote without Comment

"Graduates will have professions at which they can expect to make a good deal of money."

-- Malcolm Fraser, Australian Minister for (sic?) Education and Science, March 1972.

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